


Tecore networks

MANAGED ACCESS SYSTEM



**CELLULAR CONTRABAND
INTERDICTION SYSTEM**

FCC PHASE II CERTIFIED

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Why Managed Access



Tecore's Intelligent Network Access Controller (iNAC) is the industry leading Contraband Interdiction Service (CIS). It provides a true Managed Access capability addressing contraband cellular communication unlike any other solution on the market today. iNAC service provides the ability to detect, locate and disable unauthorized cellular communication within a facility footprint regardless of whether a device is indoors or outdoors. We are in full compliance with the FCC rules established in 47 C.F.R § 20.23.

The search for effective CIS solutions in the US can be traced back to 2008. Several high-profile court cases involving the use of contraband devices to commit crimes from behind bars put the issue to the fore. Countering contraband phone use in prisons had become a public safety imperative.

In 2009, a Notice of Inquiry for CIS technology was issued by the Department of Commerce. Already in the final stages of developing the first network-based CIS solution, Tecore Networks was instrumental in the department's data gathering efforts. The resulting report gave official recognition to Tecore's new Managed Access System (MAS) technology, naming the method as a category of CIS.

Born out of a cellular solution, the conceptual development of managed access was quite simple: leverage the same technology as the commercial wireless networks to create an intelligent and flexible countermeasure capable of covering all existing wireless technologies. Wireless devices utilize various protocols and technologies to exchange information with commercial networks. Tecore utilized a series of commercial radios to broadcast the same protocols and technologies on the same frequencies already present within a given facility. The MAS signal, however, was broadcast at a dominant strength. Other signals were overpowered, forcing devices to operate on managed 2G signals.

Tecore's iNAC was the first MAS purchased and installed in a Correctional Facility in the United States. In its first deployment, **Tecore's system prevented more than 216,000 illicit texts and 600 illicit phone calls from reaching their intended recipients in the first month alone.** Due to the iNAC's success, copycats emerged promising effective capture and control of contraband devices, but delivered little.

Tecore's Managed Access has stood the test of time, since its first deployment in 2008. When looking for a FCC certified solution that covers an entire facility, that renders un-authorized cellular devices bricks, while still providing carrier grade service to authorized users, look no further than Tecore's iNAC solution.

Why Tecore?

There is a real problem with inmates accused of running criminal enterprises within the confines of a correctional facility. With easy access to cellular devices that facilitate communication, an effective solution has to be present that is operational 24x7x365 in order to effectively shutdown the issue of contraband phones in correctional facilities.

Tecore can confidently say that we have succeeded in this endeavour.

“We turn un-authorized cellular devices into bricks”

There's no easier way to say it.



While authorized devices can continue to communicate un-incumbered by the technology, un-authorized devices are denied access to the commercial network. Instead they are controlled within the confines of the facility that Tecore manages.

These devices will not be able to recognize the difference between a Tecore managed network and a commercial carrier network. As a handset attempts to register with its commercial carrier, it is instead connecting to a Tecore network that in turn authenticates the device, obtains all the relevant user and device information, and then provides a treatment for that device based on its status as authorized or un-authorized.

With the recent FCC Phase II CIS Certification approval, at one particular facility managed by Tecore, over 790 phones were de-activated in a three month period recently. The system has been highly effective, a news report dated October 15th, 2023, Director Stirling stated that “Literally, the inmates were throwing their phones underneath the cell doors because they didn't want them. **They didn't want to be caught with them because they were bricks.**”

- Our solution does not put personnel at risk
- It does not require additional staff to be allocated for search and seizure
- It addresses cellular devices and SIM cards
- The iNAC can de-activate cellular devices rendering them unusable

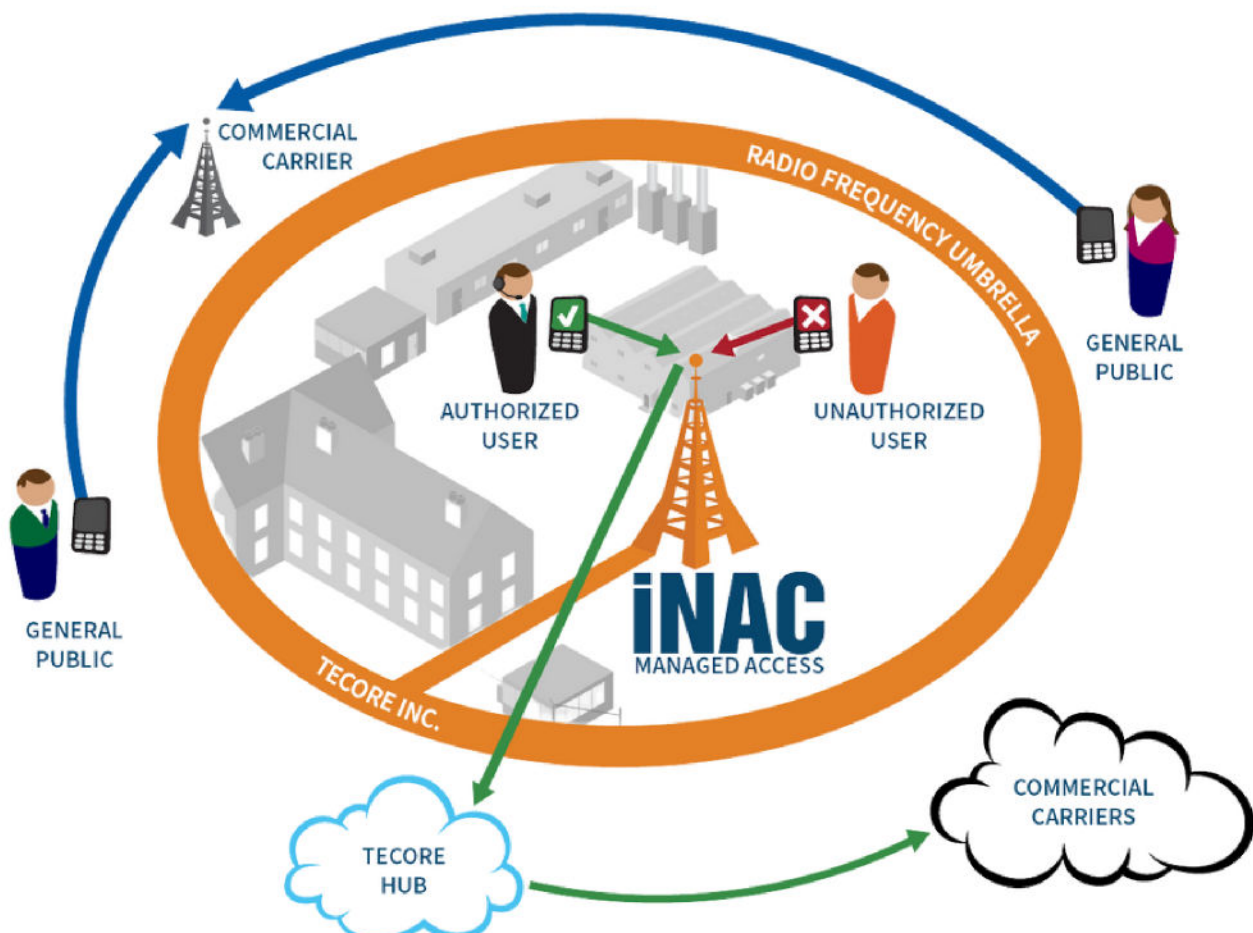
Managed Access Evolved - MAS-E

Tecore's Managed Access - Evolved (MAS-E) offers the ability to manage voice, data and messaging from cellular devices within a defined geographic footprint. It is the most effective way to prevent unauthorized/contraband phones from communicating while allowing authorized phones to communicate within a facility.

This solution is possible through a combination of Tecore's patented Intelligent Network access Control (iNAC) technology, coupled with a Distributed Antenna System (DAS) to provide a secure umbrella within which commercial cellular spectrum is managed.

Key elements of Tecore's MAS-E solution include;

- FCC CIS Phase II certified
- Actively manages voice, data and messaging from cellular devices within a geographic footprint
- Unlike jamming technology, MAS-E offers the flexibility to selectively allow cellular communications to/from authorized cellular devices
- Captures contraband in all technologies (2G, 3G, 4G and 5G)
- Covers the entire facility.
- PIN Code allocation to approved staff and vendors for temporary authorized communication while within the facility
- Route 911 or emergency calls to custom destinations, i.e. to the control center within the facility
- Prevents communication and data access to/from un-authorized devices
- As an alternative to existing solutions, Tecore can provide secure phones and tablets for authorized communication, prepaid inmate calling, video visitation & monitoring, etc.
- Incorporates roaming agreements with commercial carriers for device authentication
- Provides continuous 24x7x365 controlled cellular device management
- Provides commercial grade carrier service for authorized users
- Provide "selective management" services for targeted User devices (i.e., decide what they can /can't access).
- Provides customizable periodic reporting metrics
- Enables de-activation of contraband devices
- Future-proof solution. As operators evolve technology, we are ready



FCC Phase I & II Certification

Phase 1 certification:

- Equipment Authorization – all radio transmitters to have appropriate authorization/certification
 - Tecore met and exceeded this requirement with our high-power FCC Certified mRU radios that cover 14 U.S bands
- CIS Design/Methodology – CIS is designed and configured to located devices accurately in the correctional facility
 - Tecore met and exceeded this requirement by incorporating our own location-based service technology
- Data Security – CIS will secure and protect all data collected/retained
 - Tecore met this requirement with ease based on our existing record retention process
- Emergency call support
 - Tecore met and exceeded this requirement by also being able to re-route “un-authorized” communication to custom destinations within a facility, preventing overload at the local PSAP.
- Spectrum/Network Access Agreement – CIS may require spectrum sub-lease or roaming agreements with carriers
 - Tecore met and exceeded this requirement by having sub-leasing agreements for each facility that we operate in and leveraging our Tecore Government Services Hub to interconnect with commercial carriers.

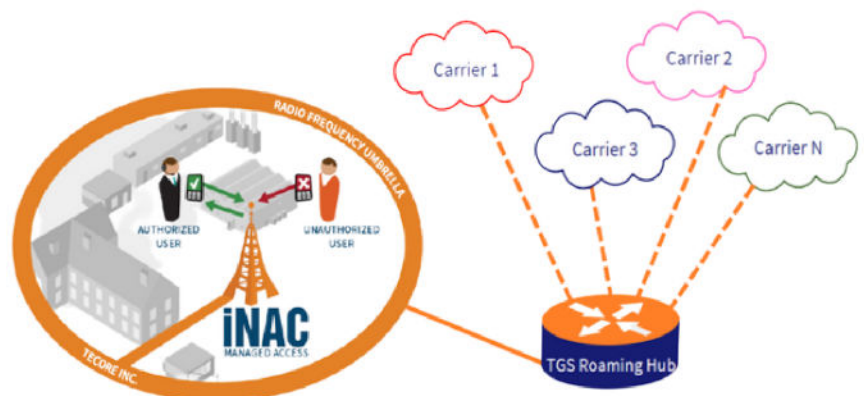


Phase 2 certification:

- CIS Site-based testing based on approved test plan
 - Tecore successfully concluded the site-based testing
- CIS Self-Certification
 - Tecore’s CIS allowed authorized Designated Correctional Facility Officer (DCFO) to submit qualifying requests to disable contraband devices.
 - Tecore is the first vendor in U.S to have self-certified its CIS solution

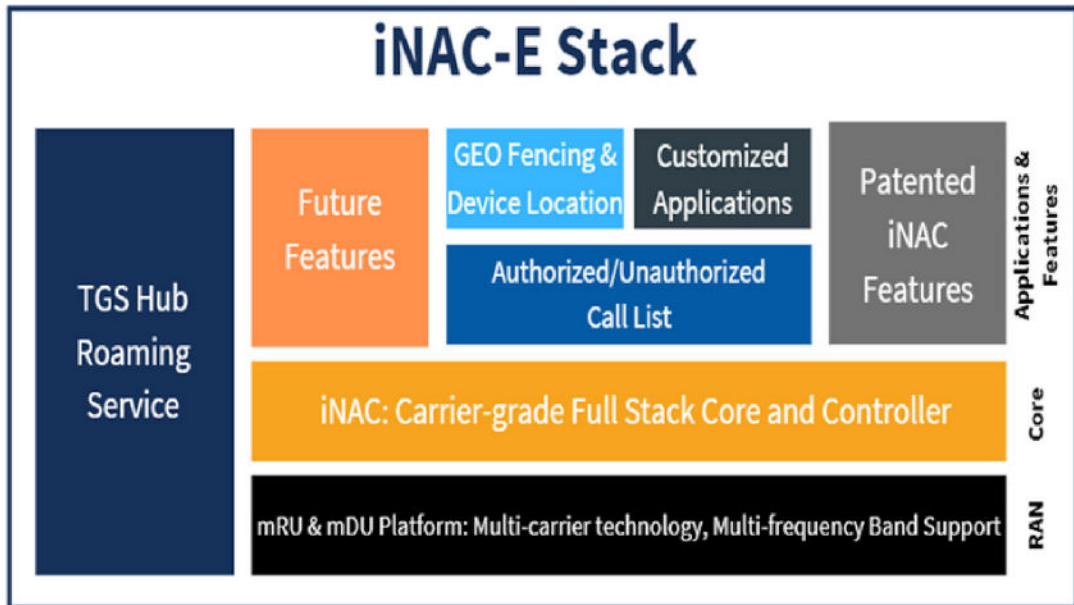
Interconnection Hub

Formed in 2012, Tecore Government Services Interconnection Hub supports Tecore Networks as its spectrum holder and management partner. It provides interconnection to commercial carrier networks, allowing the iNAC-E to authenticate all devices within its managed operational area. The Interconnection Hub allows for direct connectivity to commercial carrier networks, removing the need for 2G downgraded support. The iNAC-E acts as an authorized roaming partner network, enabling it to provide authentication queries to a device's home network.



Through the authentication process, the home network validates a device and provides that device's information to the iNAC-E. The iNAC-E registers the device onto its network and communicates directly with the device to provide the approved features unique to the device. Once authenticated, the devices within the iNAC-E operational area do not recognize that they are being served by any network other than their commercial home network.

The Interconnection Hub is capable of accomplishing this because, Tecore Government Services has entered into and maintains Interworking Agreements (IAs) with MNOs servicing the operational area. Facilitated by these IAs, the iNAC-E establishes network interconnections which support the logical signaling associated with roaming and its attendant protocols.



The iNAC-E solution is built on a combination of platforms that include;

- Tecore’s carrier grade core technology providing services to authorized subscribers in 2G/3G/4G/5G
- Radio access network which includes FCC certified radios supporting 14 U.S Bands within two (2) radios, that emulate the commercial mobile network operator signals
- iNAC-E features which manage contraband phones, geo-fencing capability to accurately locate devices using triangulation, AGPS, etc.
- Patented features allowing the iNAC-E to effectively counter contraband phones
- And most importantly, the Interconnection Hub that provides roaming service and the capability to authenticate subscribers with their home carrier network.

Geo-Fencing & Triangulation



Successful MAS deployments balances the power levels and parameters of the coverage footprint to avoid impacts on commercial coverage outside of the institution.

This is where Tecore’s Geo-Fencing and triangulation capabilities offer the most value. Utilizing triangulation, AGPS and software enhancements, our algorithms have provided institutions with state of the art location services within the facility to detect contraband cellular devices and minimize false positives.

Multi-Band, Multi-RAT FCC certified Radio

Advantages

- Can be deployed both indoors and outdoors
- Multi-generation support - 2G/3G/4G/5G
- High power - 20W of RF power per band
- Multi-band - 7 bands per radio
- Multi-carrier - Supports multiple carriers simultaneously

Supported 3GPP Bands

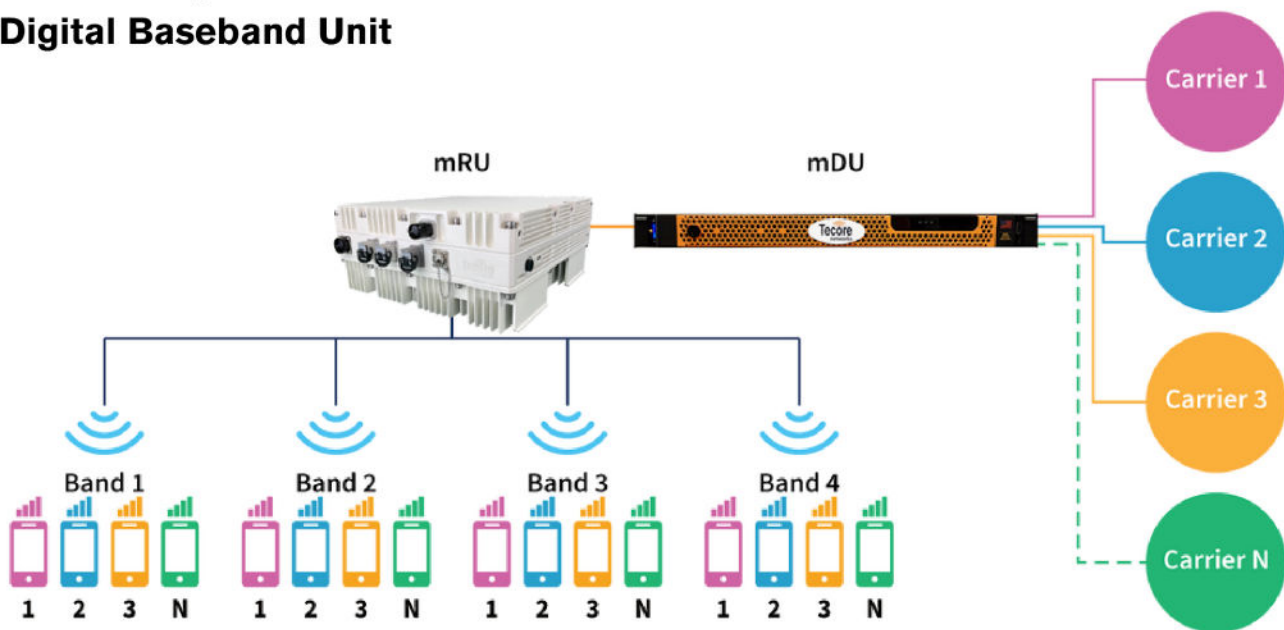
- FD-LTE/NR Band 71 (600Mhz) - T-Mobile
- FD-LTE/NR Band 13/14 (700) – Verizon, AT&T
- FD-LTE/NR Band 17/12 (700) – Verizon , AT&T
- FD-LTE/NR Band 5/26 (850) – Verizon, AT&T
- FD-LTE/NR Band 2/25 (1900 - PCS) – T-Mobile, Verizon, AT&T
- FD-LTE/NR Band 4/10/66 (1700 – AWS) – T-Mobile, Verizon, AT&T
- FD-LTE/NR Band 30 (2300 – WCS) - AT&T
- TD-LTE/NR Band-41 (2600) - T-Mobile



This infrastructure proposes a minimal footprint for maximum coverage. To cover 14 U.S bands with just two (2) radio's reduces the footprint of infrastructure that needs to be installed, saves on CAPEX and OPEX and most importantly provides an FCC approved and certified solution operating in the facility that checks all the boxes and provides a comprehensive and effective CIS solution.

In federal and state institutions and other sensitive locations where the need for security is paramount, the product utilized to provide service is just as important as the service being offered. With over 30 years of experience as a Telecom infrastructure provider, the experience we bring in the field of cellular technology is second to none. Furthermore as the inventor of Managed Access we take pride in our CIS offering being recognized in the industry as the most robust offering in the realm of Cellular Interdiction System.

Multi-Band, Multi-RAT Digital Baseband Unit



The mDU is a carrier grade baseband unit that provides high quality digital baseband signals to the mRU for broadcasting. The mRU minimizes hardware footprint as it supports multiple carriers, using multiple technologies on the same multiple frequencies independent of each other.

System Monitoring and Support

The iNAC-E provides real-time monitoring and alarms that identify equipment status or faults (if any). The sDAS mDU monitors the status of each connected mRU and reports alarm status for any faults (i.e., amplifier, fiber connection, configuration error, and frequency band information). Simple Network Management Protocol (SNMP) traps are generated and sent to the Element Management System (EMS). Simultaneously, email notifications are generated and sent to an established point of contact.

Tecore's US HQ based Customer Response Centre (CRC) - available 24/7/365 via phone and email is all about customer satisfaction. The highly knowledgeable staff maintain close communication with endpoint customers both domestically and abroad. The CRC provides on-demand service in response to customer requirements, but through its secure remote connections to all of Tecore's deployments, Tecore does more than provide help desk services. The CRC proactively monitors system activity, enabling not only the remote implementation of enhancements and upgrades, it empowers Tecore's engineers to identify and cure potential risks and service issues before they occur, all in a manner that is 100% transparent to the end user. Tecore keeps watch so that the facility staff can maintain focus on their work and rest assured that iNAC-E is being supported in the background at all times to keep unauthorized communications contained.

Tecore's ISO 9001: 2015 certified incident management and support processes ensure timely resolution of any identified or otherwise reported solution issues

Robust Reporting

Leveraging Tecore's location based technology, the iNAC-E can provide accurate **real-time** reporting capability of cellular devices that are attempting to communicate.

The reports contain the essential parameters that assist in identifying the device, subscriber information and geo-location.

- MSISDN
- IMSI
- IMEI
- Latitude
- Longitude

The reporting capabilities can be configured to send weekly or monthly reports that provide additional information for detailed forensic analysis.



With the FCC Phase II certification under our belt, Tecore has effectively de-activated contraband phones within correctional facilities with a high degree of confidence, while minimizing false positives.

The de-activation process begins with a Candidate Contraband Report generated by application of the iNAC-E's Candidate Contraband Identification Algorithm. This report is provided to a duly authorized DCFO, who may then present the reported data to individual carriers with a qualifying request for service and device deactivation.

Optional Features

Security and Staff PTT

- As a private carrier-grade cellular network provider, iNAC-E can also support a push-to-talk integration over a cellular network.
- Tecore can augment or replace existing PTT systems.
- Provide 4-5 bars coverage for the private authorized cellular device.



Camera Systems

- Secure, cellular based with plenty of sublicensed spectrum for large required bandwidth
- Not deployed over CBRS (Unlicensed, Limited, and Unreliable Spectrum)
- Control access effectively over authorized spectrum
- Camera placement available everywhere and anywhere



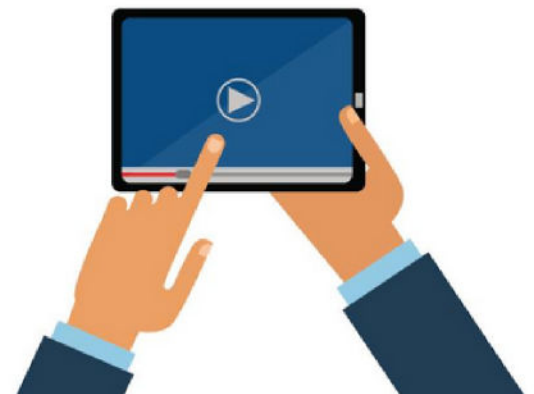
PIN Code Authorization

- Provide select visitors with authorized access to communicate without having to constantly modify the "authorized" list
- Define Time of day for authorized communication
- A quick temporary solution to allow vendors/visiting staff and dignitaries to communicate in the secure facility



Secure inmate tablets/phones for authorized communication

- Safe video/voice/messaging
- Prepaid inmate calling
- Video visitation & monitoring
- Facilitates inmate programs
 1. Pre-release and re-entry education
 2. Digital resource library for juvenile or adult learning
 3. Safe video/voice/messaging
 4. Counselling
 5. Rehabilitation
 6. Legal services
- Individually configured and manageable voice, messaging, and data access.
 1. Time of day
 2. Authorized call-out lists
 3. Full monitoring capabilities



Annoyance Feature

- Patented feature that will persistently page/ring/text all unauthorized users
- Allows facility to verify if the system is functioning by simply bringing in an unauthorized user
- Keep unauthorized device busy and drain its battery
- Another way to turn un-authorized cellular devices into bricks



Patent Portfolio

Tecore Networks, the inventor of Managed Access and the pioneer of the first Network Access Controller, continues to invest heavily in research and development for this product offering. Though many Network Access Control technology vendors may attempt to replicate Tecore's technology, the proof is in the patents.

Utilizing our 25 managed access patents, the FCC's certification process, 30 plus years of experience, and innovative engineering, Tecore now offers the most robust managed access system available, the Intelligent Network Access Controller-Evolved.



Tecore's iNAC-E is the only solution capable of supporting existing and future technologies, proactively measuring and adapting to the RF environment, and providing an evolutionary platform that supports the development of customized features and applications. An iNAC allows government facilities to not only monitor all mobile devices and control illicit BYODs but also offers private network data services for the facility, aiding monitoring and management of infrastructure, services, and security.

| TECORE NETWORKS CONTRABAND INTERDICTION SYSTEM PATENTS | | |
|--|---|----------------|
| Patent Number | Title | Date Granted |
| 11,800,357 | Intelligent Network Access Control | October 2023 |
| 20,230,089,496 | Systems and Methods for Communication Control in a Restricted Environment | March 2023 |
| 11,509,663 | Systems and Methods for Communication Control in a Restricted Environment | November 2023 |
| 20,210,409,949 | Intelligent Network Access Controller and Method | December 2021 |
| 11,064,359 | Intelligent Network Access Controller and Method | July 2021 |
| 11,057,771 | Intelligent Network Access Control | July 2021 |
| 10,771,474 | Systems and Methods for Communication Control in a Restricted Environment | September 2020 |
| 10,679,382 | Intelligent Network Access Control | June 2020 |
| 10,679,381 | Intelligent Networks Access Control | June 2020 |
| 10,673,865 | Systems and Methods for Communication Control in a Restricted Environment | November 2019 |
| 10,469,506 | Systems and Methods for Communication Control in a Restricted Environment | August 2018 |
| 10,063,566 | Intelligent Network Access Control | August 2018 |
| 10,057,774 | Intelligent Network Access Control and Method | July 2017 |
| 9,712,540 | Intelligent Network Access Control System | July 2017 |
| 9,712,539 | Intelligent Network Access Control | December 2016 |
| 9,526,021 | Intelligent Network Access Controller Method | May 2016 |
| 9,332,412 | Intelligent Network Access Control | April 2016 |
| 9,313,639 | System for Controlling Wireless Devices Access Method | March 2016 |
| 9,295,071 | Intelligent Network Access Controller Method | October 2015 |
| 8,825,001 | Intelligent Network Access Controller Method | September 2014 |
| 8,509,740 | Intelligent Network Access Controller Method | August 2013 |
| 8,437,741 | Intelligent Network Access Controller Method | May 2013 |
| 8,254,886 | Intelligent Network Access Controller Method | August 2012 |
| 7,957,734 | Push/Pull Information System for Airborne Networks | June 2011 |
| 7,733,901 | Mult-Protocol Wireless Communication Apparatus and Method | June 2010 |



ABOUT TECORE

Since 1991, Tecore has been committed to providing innovative, reliable, and scalable wireless solutions. It is a trusted provider to the commercial, government, and military markets and has established a proven track record of performance and evolution driven by its innovative software-defined approach. Tecore practices, learns, and implements -- continuously. Keeping pace with the ever-changing needs of the wireless industry, while always searching for innovative ways to apply technology.

As the inventor of Managed Access and with over 25 patents in the Intelligent network access control (iNAC) product, Tecore has successfully deployed our MAS-E solution in both Urban and Rural areas across the country and internationally, Tecore has provided MAS solutions for over two decades and continues to set the benchmark for the most effective and regulatory compliant form of Contraband Interdiction in the country.

Tecore's active INAC-E radio components are FCC certified and CE compliant; while its services are ISO-9001:2015 certified.

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